

Columbia Mishra, Ph.D.

Summary:

- Engineering leader with strong technical and leadership abilities with a passion for problem solving and innovation.
- 14+ years of experience in delivering results in highly diverse, international and multi-cultural work environments ranging from research, consulting startup to large corporation.
- Experienced in Intel's core manufacturing processes and system level adaptation with focus on enabling lithography patterning for Intel's advanced process nodes and system level computational modeling from thermal management perspective.

EDUCATION

Doctor of Philosophy in Mechanical Engineering, Thermal Fluid Systems, The University of Texas at Austin, 2016

Advisor: Prof. Jayathi Y. Murthy

GPA: 3.62/4.00

Master's in Mechanical Engineering, Texas Tech University, May 2008

GPA: 3.92/4.00

Bachelor of Mechanical Engineering, Jadavpur University, India, 2006

First Class

Private Pilot (In Training), Hillsboro, Oregon, 2018-2019

LEADERSHIP

- **Early Career Leadership Program to Serve Engineering (ECLIPSE), American Society of Mechanical Engineers, 2019-2020**
 - One of the 10 high potential early career engineers selected across globe in the prestigious ECLIPSE program to serve engineering
 - Develop strategies for the Student and Early Career Development Sector to inspire and empower post-secondary students and early career engineers to solve global challenges
 - Engage with the members of the United States Congress to advocate for innovation and technology policies in Washington D.C.
- **Technology Development Working Group, Thermal & Mechanical Systems Engineering, Intel Corporation, 2017- Present**
 - Developed process to identify innovation projects with high business value proposition; selection process executed on a quarterly cadence
 - Chair the working group, drive the development plan, chair weekly meetings, plan clear milestones, drive execution and schedules
 - Collaborate and coordinate with partner teams external to Client Computing Group and track project progress
 - Manage stakeholders to align resources and drive consensus
- **President, Graduate Student Assembly, The University of Texas at Austin, 2013-2014:** Elected as chief executive officer for campus-wide organization, serving as official voice of the 13,000 graduate students on campus to university administration, UT System Board of Regents, City of Austin, Texas Legislature, advocated for graduate students at United States Legislature
- **Taught Entrepreneurship, UGS 302, The University of Texas at Austin, 2015:** Mentored students on startup pitches, market survey and final research paper. Coordinated the syllabus and worked with guest entrepreneurs from the local Austin startup community
- **International Mechanical Engineering Congress and Exposition (IMECE), 2017-2019: Topic Chair,** Computational Heat Transfer
- **Topic Chair, Summer Heat Transfer Conference (SHTC), 2017;** Session Chair: ITTherm 2019
- **Heat Transfer Division,** American Society of Mechanical Engineers (ASME), 2016- Present: Voting Member, K-20 Committee
- **Reviewer** for Journal of Solar Energy Engineering; Journal of Thermophysics and Heat Transfer; Transactions on Components, Packaging and Manufacturing Technology; Summer Heat Transfer Conference; IMECE
- **President, Graduate Engineering Council, UT Austin, 2011-2013 (2-terms):** Elected to represent over 2000 Cockrell School graduate students to university administration and Senate of College Councils. Organized Graduate and Industry Networking (GAIN) in 2011 and 2012
- **Student Services Budget Committee, Voting Member, UT Austin, 2013-2014:** Regularly met with campus leaders to establish financial policy for UT Austin and manage more than **\$40 million annual budget** for student services such as health services and transportation
- **UT Systems Student Advisory Council, 2013-2014:** As Graduate and Health Affairs Committee Vice-Chair, prepared recommendations for UT Systems Board of Regents and Chancellor on graduate student advising, research funding, and health benefits
- **Student Advocates for Graduate Education (SAGE), 2013-2014:** Represented UT Austin at national coalition of tier-one public institutions while advocating for graduate education funding, tax benefits, and immigration reforms at Washington D.C.
- **Secretary, Engineers Without Borders (EWB), Texas Tech University Chapter, 2007-2008:** As a member of the Projects Committee visited Juarez, Mexico in 2007 to work on renewable energy source for an elderly village run by local non-profit organization

INDUSTRY EXPERIENCE

- **Intel Corporation, Hillsboro, Oregon, October 2016 - Present**

Senior Thermal Engineer, Hillsboro, Oregon, 2017– Present

- **Lead the Technology Development Working Group** for innovation process for an interdisciplinary team of 60 talented engineers
- **Lead the Client Customer Focus Group** to align customer interactions, priorities and identifying engineering collaterals
- Develop system concepts for ADL-H, DG products, conduct design previews, perform system acceptance, and resolve design issues
- Delivered model correlations on KBL-R, provided customer guidance on ICL-Y, density factor models on –U swimlane products
- Pathfinding work on Foveros and multi-die package architectures while enabling performance gain for turbo and higher power modes
- **Impact:** Authored 3 IDFs and 1 patent application

Resolution Enhancement Technology Design Engineer, Hillsboro, Oregon, 2016 – 2017

- Delivered test masks, test patterns, sampling strategies, process models, defect detection strategies, and Optical Proximity Correction (OPC) algorithms to perform layout correction for masks for for 14/10nm process nodes for metal interconnects

- Supported production photomask tapeouts on several of Intel's and external products
- Provided feedback to external teams on process capabilities to optimize design rules
- **Apple Inc., Hardware Intern, Cupertino, California, 2014**
 - Performed thermal analysis in printed circuit boards for thermally aware designs involving multiple computational tools
 - **Impact:** Identified key tool improvements and communicated requirements to vendors resulting in better analysis and tool integration
- **Stress Engineering Inc., Analyst, Houston, Texas, 2008 – 2009**
 - Researched in Marine Assurance Engineering, Riser Analysis and Mooring System Analysis, Finite Element Analysis Modeling
 - Conducted analyses of floating oil and gas production systems in time and frequency domains with specific focus on risers
 - Processed real time data from floating systems to interpret and predict behavior of floating systems
 - Developed tools in Excel for efficient post-processing of analysis results
- **Makino Asia Pte Ltd, Research & Development, Singapore, 2008**
 - Performed analysis of thermal expansion in ball screw of S33 machines
 - Designed and conducted experiments on milling machines for validation with surface finish in final products
- **Tata Motors, Intern, Jamshedpur, India, 2005**
 - Conceptualized new Cylinder Head Line for quality and capacity enhancement
 - Designed inspection fixture and gauges to check position of critical bores on Cylinder Head Cover Face

PUBLICATIONS

Number of Citations - **1120**

- Patent: Torsional Heat Pipe, Filed April 18, 2019
- Intel Mechanical and Thermal Engineering Summit (IMTES), 2019: Falcon Lake Optimization, Journey to Customer Adoption
- **ASME International Mechanical Engineering Congress and Exposition 2016:** Volume Averaged Phonon Boltzmann Transport Equation for Non-Gray Heat Transport in Nanoporous Composites
- **ASME Summer Heat Transfer Conference 2016:** Volume Averaged Phonon Boltzmann Transport Equation for Heat Transport
- **Nature Materials:** Thermal Conductivity of Isotopically Modified Graphene, 11, 203-207, 2012
- **Heat Transfer Engineering:** Analysis of an Ultrathin Graphite-based Compact Heat Exchanger, Vol. 33, 11, 2012
- **ACS Nano:** Raman Measurements of Thermal Transport in Suspended Monolayer Graphene of Variable Sizes, 5, 321–328, 2011
- **Journal of Fluid Mechanics:** Analysis of General Creeping Motion of a Sphere inside a Cylinder, Vol. 642:295–328, 2009
- **ASME/JSME 8th Thermal Engineering Joint Conference 2011:** Analysis of a Graphene/Ultrathin Graphite Heat Exchanger for Aerospace Thermal Management
- **AICHE Annual Meeting 2007:** Detailed Dynamics of Suspended Particles In a Pressure-driven Flow through a Bio-Conduit
- **7th ISHMT–ASME Heat and Mass Transfer Conference 2006:** Performance Analysis of Fins with Uniform Thickness

AWARDS AND RECOGNITION

- **Invited Talk, Indian Institute of Science (IISc), Bangalore, 2018:** Phonon Transport in Nano Composites
- **Qualcomm Innovation Challenge Fellowship 2014,** Non-Equilibrium Electro-Thermal Transport in Ultra-Scaled Microelectronics
- **Cockrell School of Engineering Student Leadership Award 2012,** The University of Texas at Austin
- Best Poster Award, Graduate and Industry Networking, The University of Texas at Austin, 2016
- Warren A. and Alice L. Meyer Endowed Scholarship in Engineering from Cockrell School of Engineering, 2011
- The Bruce J. Heim Foundation Scholarship 2007, from ASME

SKILLS

- **Operating Systems:** LINUX, WINDOWS, Mac OS - **Others:** Keynote, MS Office, LaTeX, ORIGIN, Xmgrace
- **Thermal Modeling, Semiconductor Design**
- **Programming Languages:** Calibre DRC/SVRF, C++, Python, FORTRAN, MATLAB, AutoLISP
- **Scientific Tools:** Icepak, SIwave, AutoCAD, Autodesk Inventor, Mathematica, ABAQUS, GNUPLLOT, RAMS, ANSYS Workbench, FLUENT, CFX, SolidWorks, COMSOL, Paraview, PowerDC, LabVIEW

ACTIVITIES

- Member, American Society of Mechanical Engineers (**ASME**), Institute of Electrical and Electronics Engineers (**IEEE**)
- **Core Committee Member, EXTEND,** Employee Resource Group promoting **inclusion** within **Intel**
- **Mentor, Mind Matters, Portland Chapter, Oregon, 2017- Present:** Prepare first generation high school students for college
- **Mentor, Student Engineers Educating Kids (SEEK), 2010-2012:** Mentored students on science projects at Garcia Middle School, Austin
- Fundraised \$5330 for child education projects by Association for India's Development by running half-marathon at Austin Livestrong 2013
- Fundraised \$6100 to support delegation of graduate students from UT Austin to 2014 Student Advocates for Graduate Education (SAGE) conference to advocate for policies with the United States Congress
- Senior Diploma holder in Bharatnatyam, classical Indian dance form and diploma in Indian classical music and Fine Arts